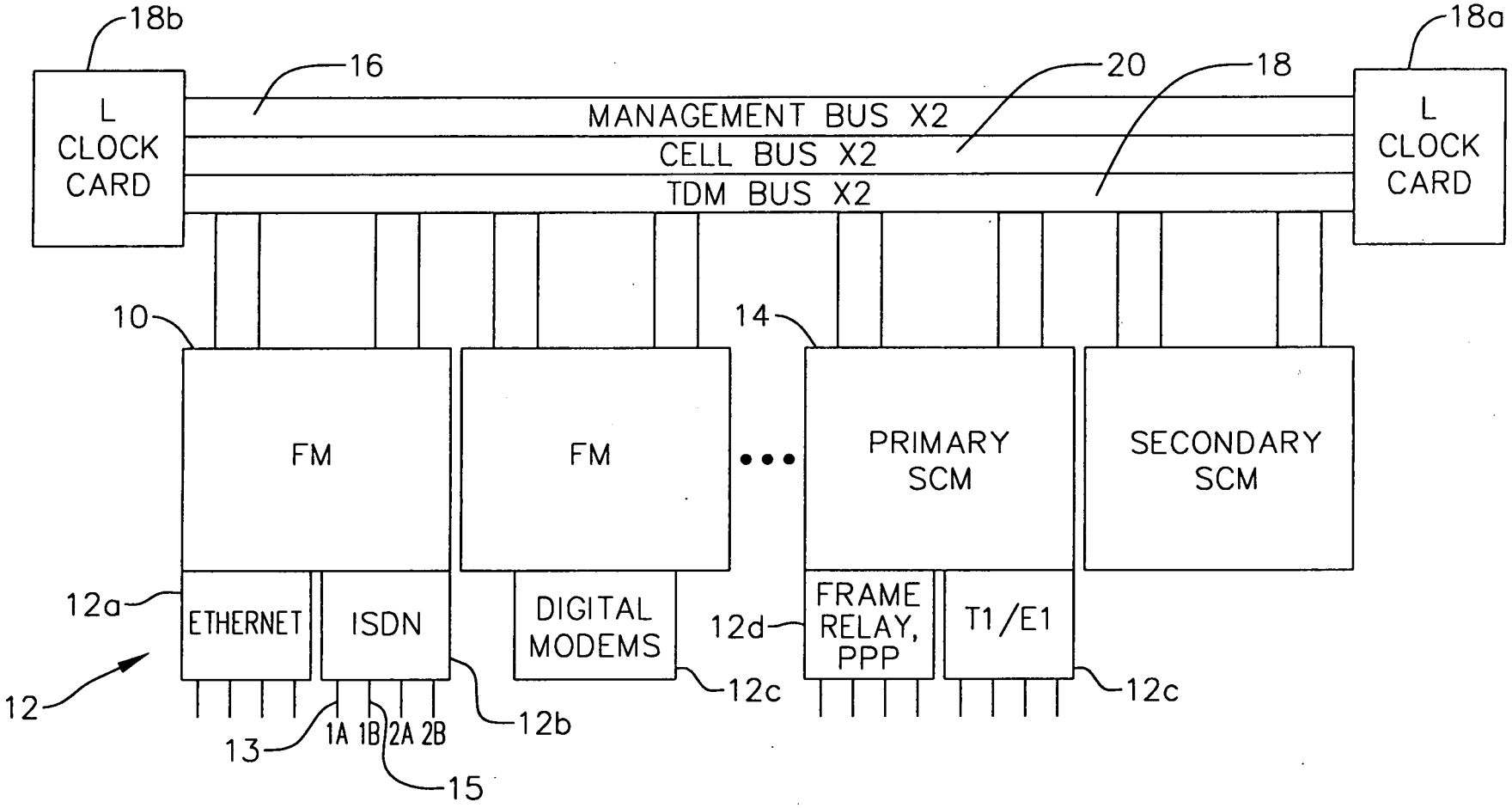
D0E220 '99ET360

FIG. 1



D02220 "5925560

FIG.2

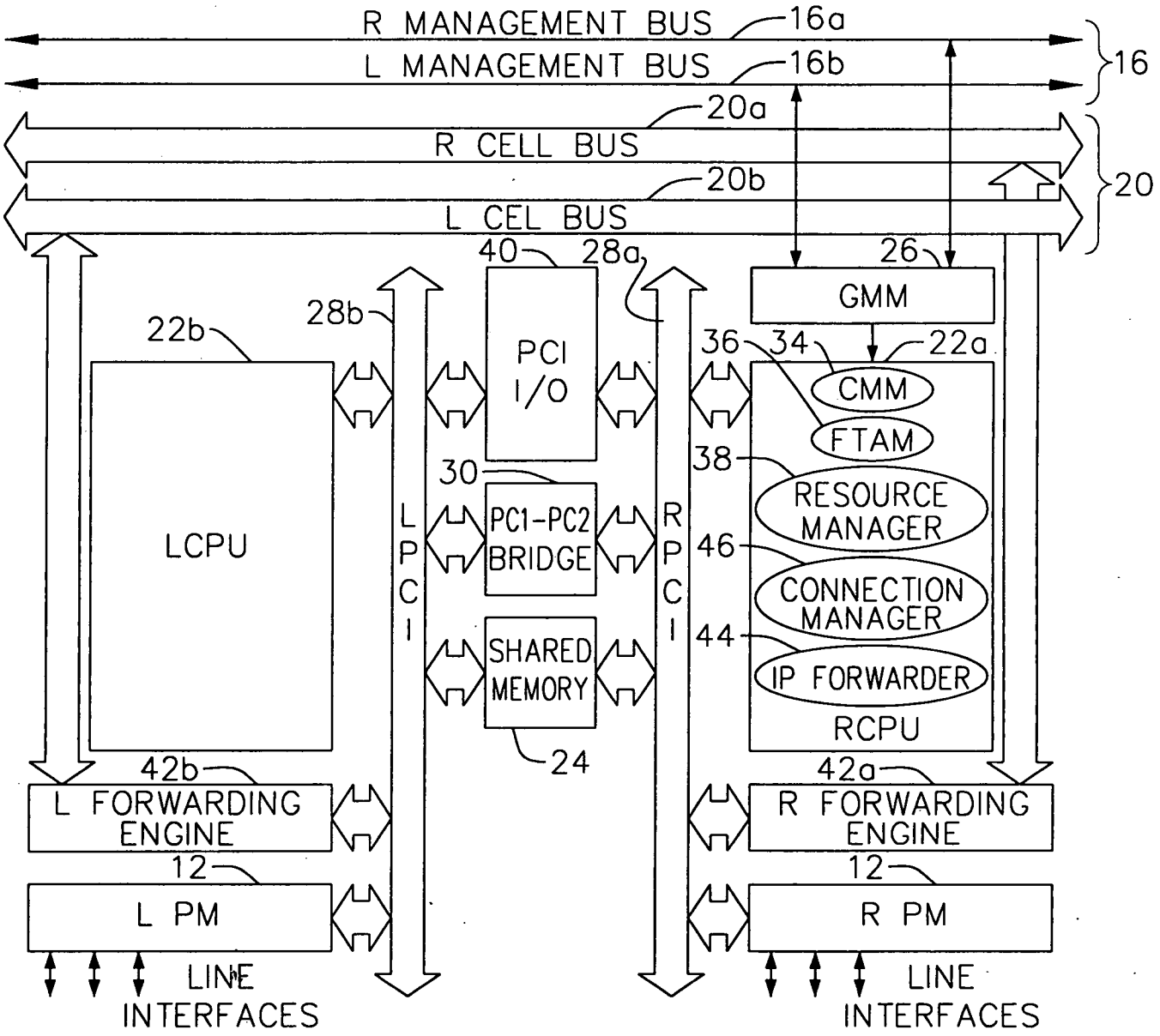
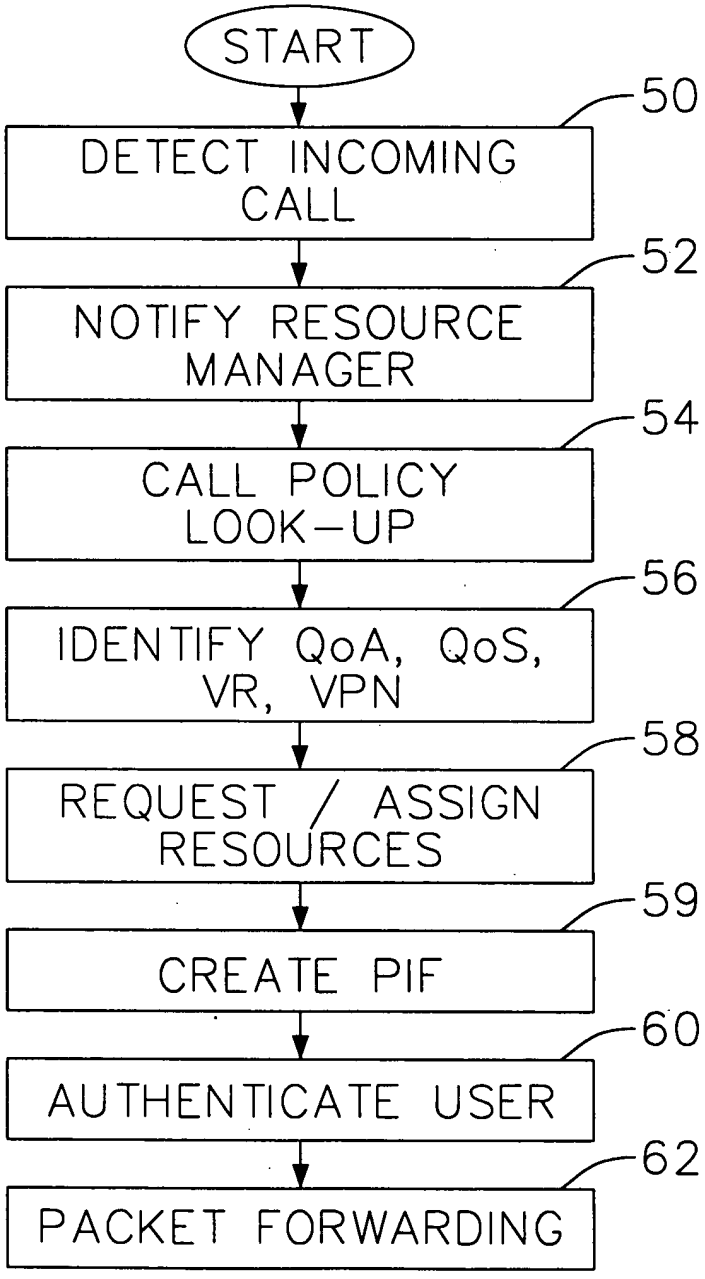
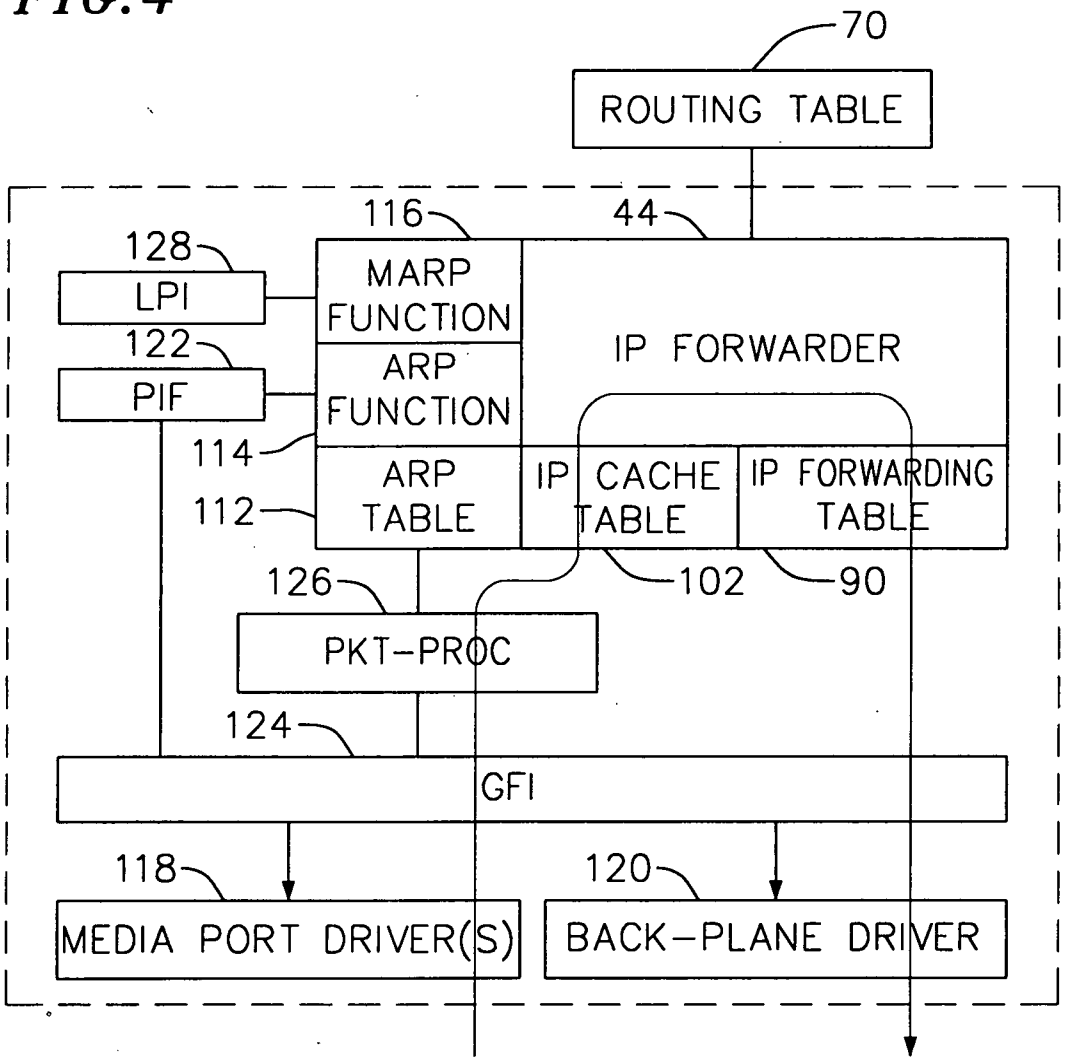


FIG. 3


START
DETECT INCOMING CALL
50
NOTIFY RESOURCE MANAGER
52
CALL POLICY LOOK-UP
54
IDENTIFY QoA, QoS, VR, VPN
56
REQUEST / ASSIGN RESOURCES
58
CREATE PIF
59
AUTHENTICATE USER
60
PACKET FORWARDING
62

D0220 S62F506

FIG. 4



IP Route Table:
Total Routes: 32

Destination	Subnet Mask	NextHop	Owner	Cost
0.0.0.0	0.0.0.0	206.169.142.9	STATIC	1
0.0.0.0	0.0.0.0	206.169.114.17	STATIC	2
0.0.0.0	0.0.0.0	10.1.205.18	OSPFE	11
10.180.180.0	255.255.255.248	10.1.205.18	OSPFE	11
10.3.1.16	255.255.255.240	10.1.130.2	OSPFE	20
10.2.215.64	255.255.255.240	10.1.130.1	OSPF1	20
10.3.215.64	255.255.255.240	10.1.130.2	OSPF1	20
10.2.215.0	255.255.255.192	10.1.130.1	OSPF2	30
10.3.215.0	255.255.255.192	10.1.130.2	OSPF2	30
10.3.215.128	255.255.255.192	10.1.130.2	OSPF2	130
10.1.54.0	255.255.255.0	DIRECT	DIAL-POOL	1
10.131.71.0	255.255.255.0	10.1.205.18	OSPFE	11
10.1.0.0	255.255.0.0	DIRECT	LOCAL	1
10.181.0.0	255.255.0.0	10.1.205.18	OSPFE	11
10.87.0.0	255.255.0.0	10.1.205.18	OSPFE	11
10.89.0.0	255.255.0.0	10.1.205.18	OSPFE	11
10.91.0.0	255.255.0.0	10.1.205.18	OSPFE	12
10.200.0.0	255.255.0.0	10.1.205.18	OSPFE	20
10.77.0.0	255.255.0.0	10.1.51.200	OSPF1	110
11.22.33.0	255.255.255.0	10.1.16.16	OSPF1	110
206.169.114.16	255.255.255.252	DIRECT	LOCAL	1
206.169.114.152	255.255.255.248	DIRECT	DIAL-POOL	1
206.169.114.136	255.255.255.248	DIRECT	DIAL-POOL	1

Press Enter to Continue, Any other key followed by Enter to Abort:

Fig. 5

PRI-SCM:1.1>=2:netman:ip#_view ipf

IP Forwarding Table:

Total IPF table entries: 12

90

92 Destination	94 Subnet Mask	96 Nexthop	98 Type	100 Flags(*)
10.3.238.1	255.255.255.255		SPORT	SD(r)
10.1.6.36	255.255.255.255		SPORT	M
10.1.6.35	255.255.255.255		SPORT	M
10.1.6.34	255.255.255.255		SPORT	M
10.1.6.33	255.255.255.255		SPORT	M
10.1.6.32	255.255.255.255		SPORT	M
10.1.6.31	255.255.255.255		SPORT	M
10.2.238.1	255.255.255.255		SPORT	SD(l)
10.1.6.30	255.255.255.255		SPORT	SD(l)
10.3.0.0	255.255.0.0		SPORT	PD(r)
10.2.0.0	255.255.0.0		SPORT	PD(l)
10.1.0.0	255.255.0.0		SPORT	PD(l)
0.0.0.0	0. 0. 0. 0.	206.169.142.9	SPORT	R

(*) D: Direct (and l = local card only, r = remote card only),
S: System i/f, R: Remote, P: Supernet, F: Default, and M: Mgmt.

Actual IPF Table Entries: 12

Fig. 6

Total IP Cache Entries: 3

102

Destination 104	Source 106	Out Port 108	Header 110
207.200.77.45	206.169.114.138	Fr.1.5.2.3.1	08001000cea97211
206.169.114.	142 10.1.1.25	Mo.1.3.1.1.29	0800201dcea9728e
198.41.0.5	206.169.114.138	Fr.1.5.2.3.1	08000000cea97211

Fig. 7

112

IP ARP Table:

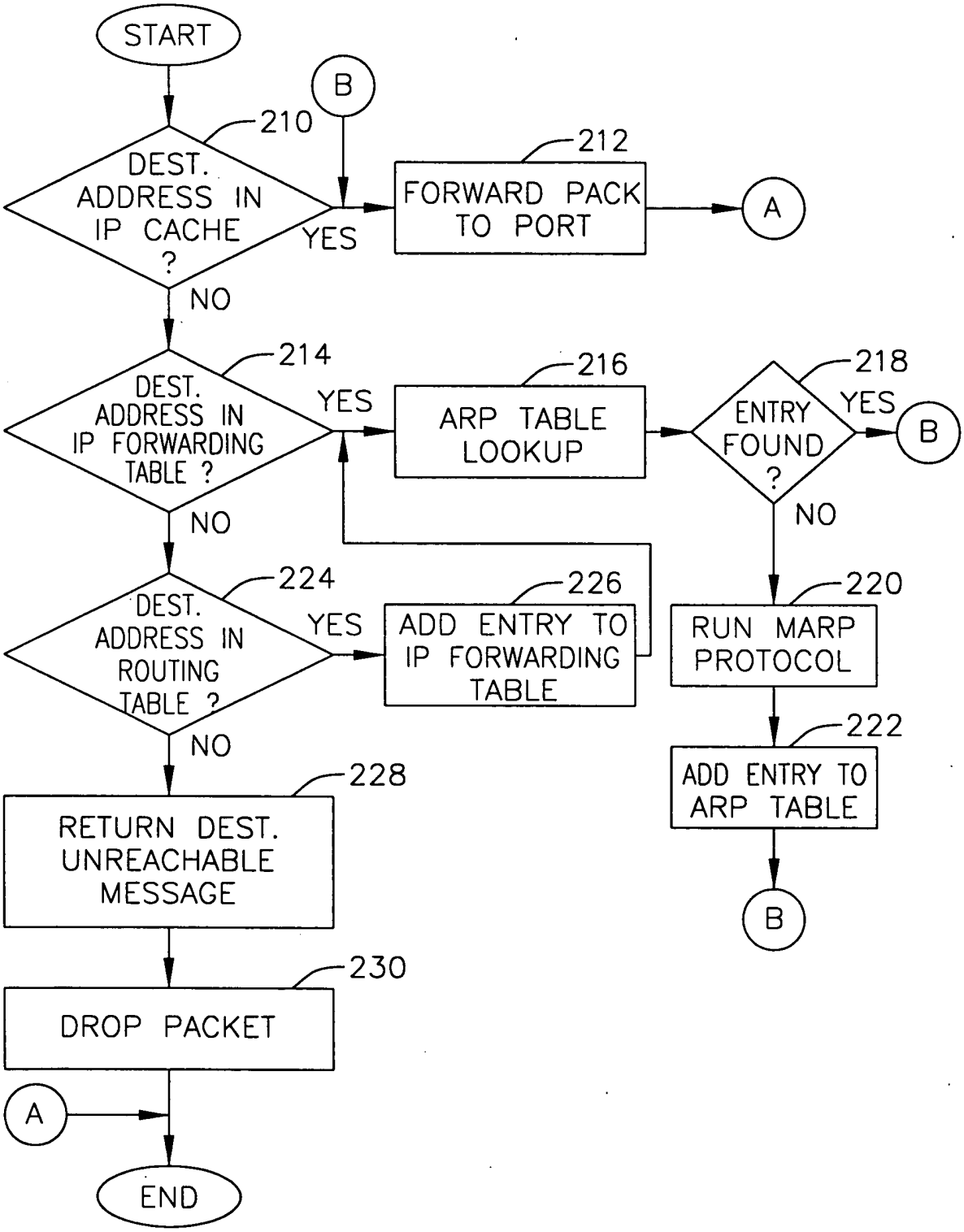
IP Address (200)	MAC Address (202)	Physical Port (204)	Type(*) (206)
10.1.1.101	00-ff-4a-3d-2f-1a	En.1.3.1.1.1.	S
10.1.5.100	00-ff-ff-01-ff-20	En.1.3.2.1.1.	D
150.140.140.30	08-00-09-ff-65-ff	En.1.3.1.1.14	LB
147.128.128.60	08-00-09-ff-38-38	En.1.3.1.1.10	D
10.1.5.109	00-ff-ff-04-02-ff	En.1.3.2.1.8	S

(*) R: Rmt, L: Lcl, D: Dyn, S: Stat, P: Pt2Pt, T: Route and B: Bcast

Total Arp Table Entries: 5

Fig. 8

FIG. 9


START
B
210
DEST. ADDRESS IN IP CACHE ?
YES
212
FORWARD PACK TO PORT
A
NO
214
DEST. ADDRESS IN IP FORWARDING TABLE ?
YES
216
ARP TABLE LOOKUP
218
ENTRY FOUND ?
YES
B
NO
220
RUN MARP PROTOCOL
222
ADD ENTRY TO ARP TABLE
B
NO
224
DEST. ADDRESS IN ROUTING TABLE ?
YES
226
ADD ENTRY TO IP FORWARDING TABLE
NO
228
RETURN DEST. UNREACHABLE MESSAGE
230
DROP PACKET
A
END

D02260 "3521560

FIG. 10

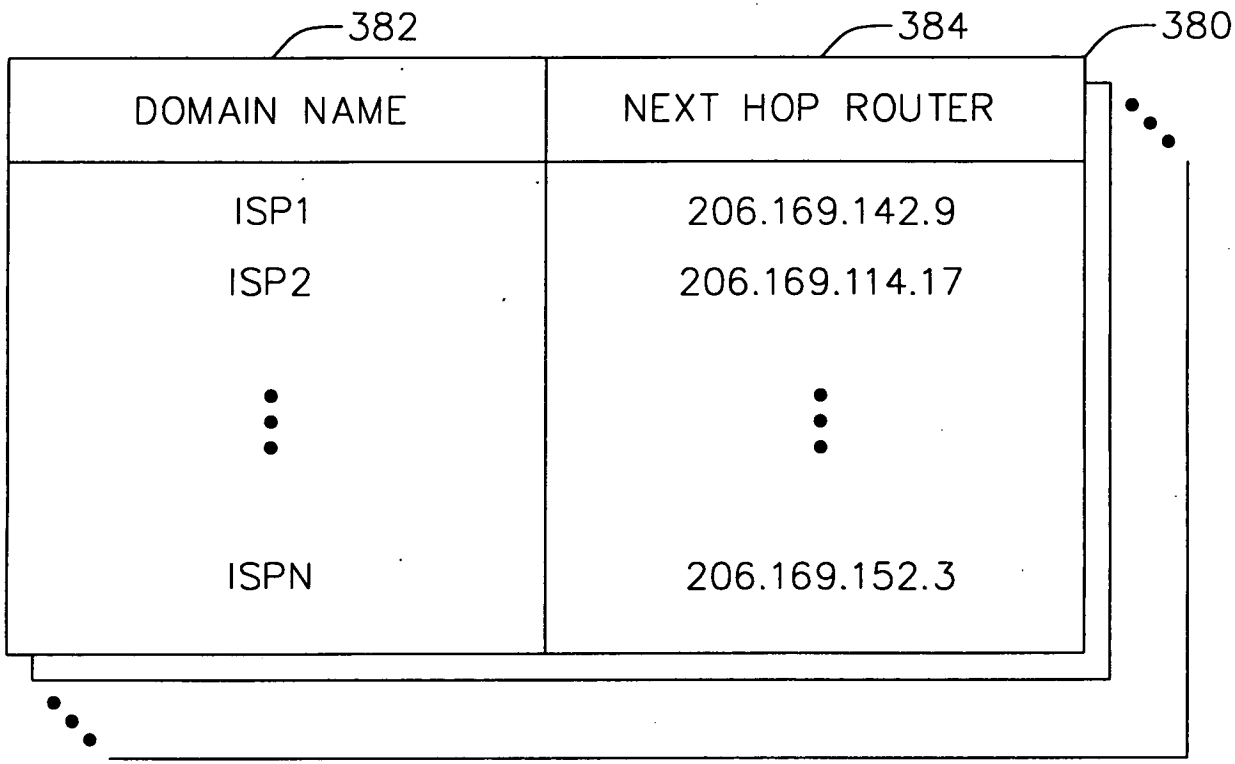
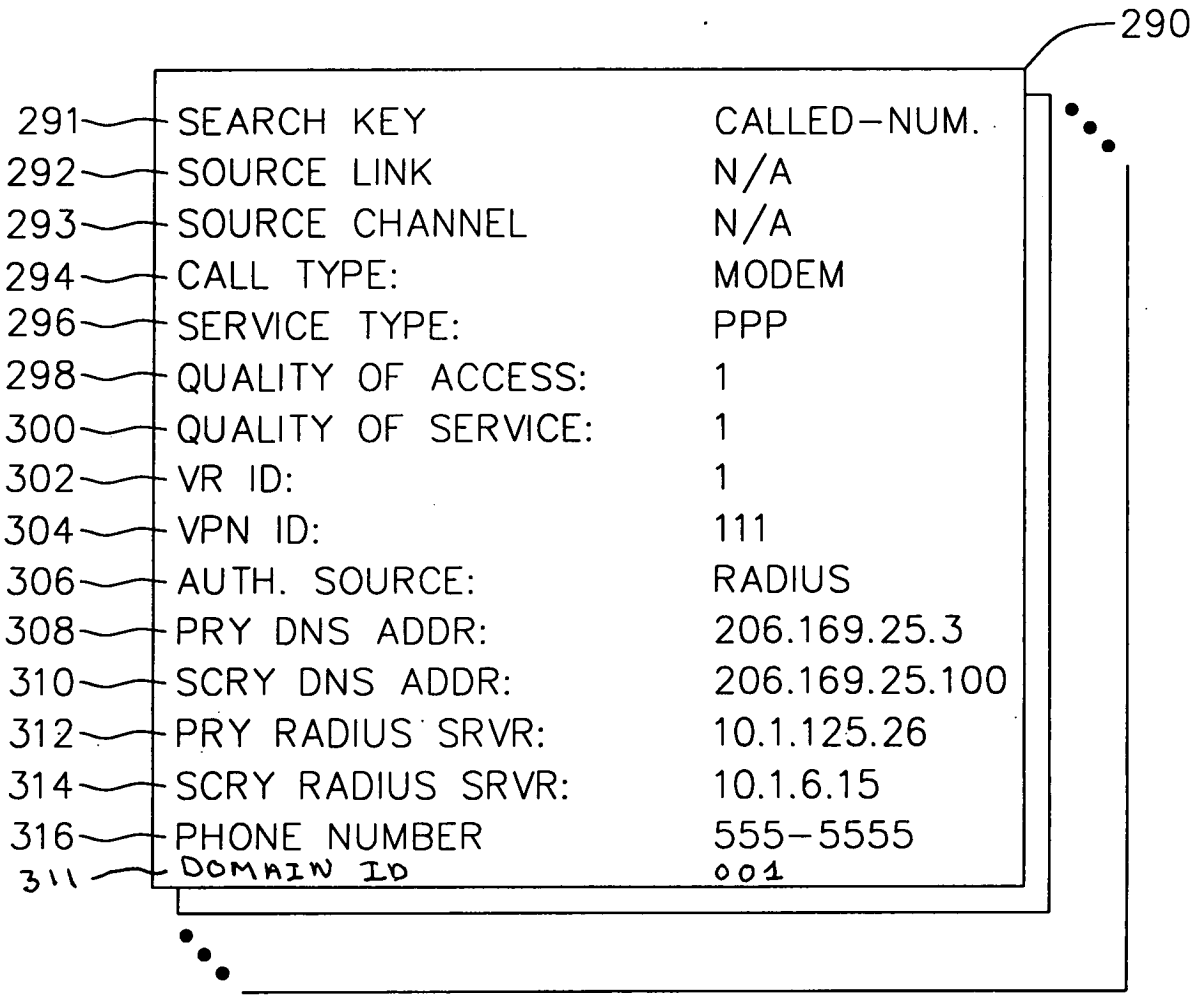


FIG. 11


290
291
SEARCH KEY
CALLED-NUM.
292
SOURCE LINK
N/A
293
SOURCE CHANNEL
N/A
294
CALL TYPE:
MODEM
296
SERVICE TYPE:
PPP
298
QUALITY OF ACCESS:
1
300
QUALITY OF SERVICE:
1
302
VR ID:
1
304
VPN ID:
111
306
AUTH. SOURCE:
RADIUS
308
PRY DNS ADDR:
206.169.25.3
310
SCRY DNS ADDR:
206.169.25.100
312
PRY RADIUS SRVR:
10.1.125.26
314
SCRY RADIUS SRVR:
10.1.6.15
316
PHONE NUMBER
555-5555
311
DOMAIN ID
001

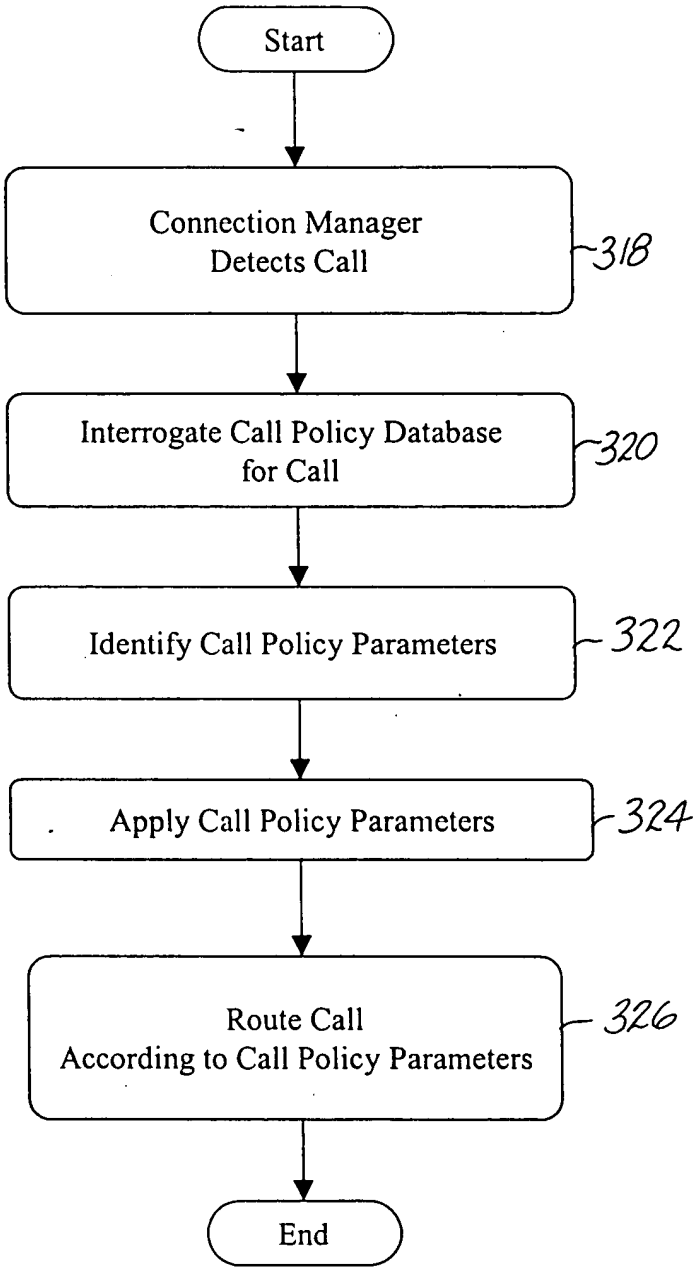

Start
Connection Manager Detects Call
318
Interrogate Call Policy Database for Call
320
Identify Call Policy Parameters
322
Apply Call Policy Parameters
324
Route Call According to Call Policy Parameters
326
End

Fig. 12

002220 "5921 1560

FIG. 13

328 330

QoA LEVEL	ACCESS THRESHOLD
1	100 %
2	75 %
3	50 %
4	25 %

332

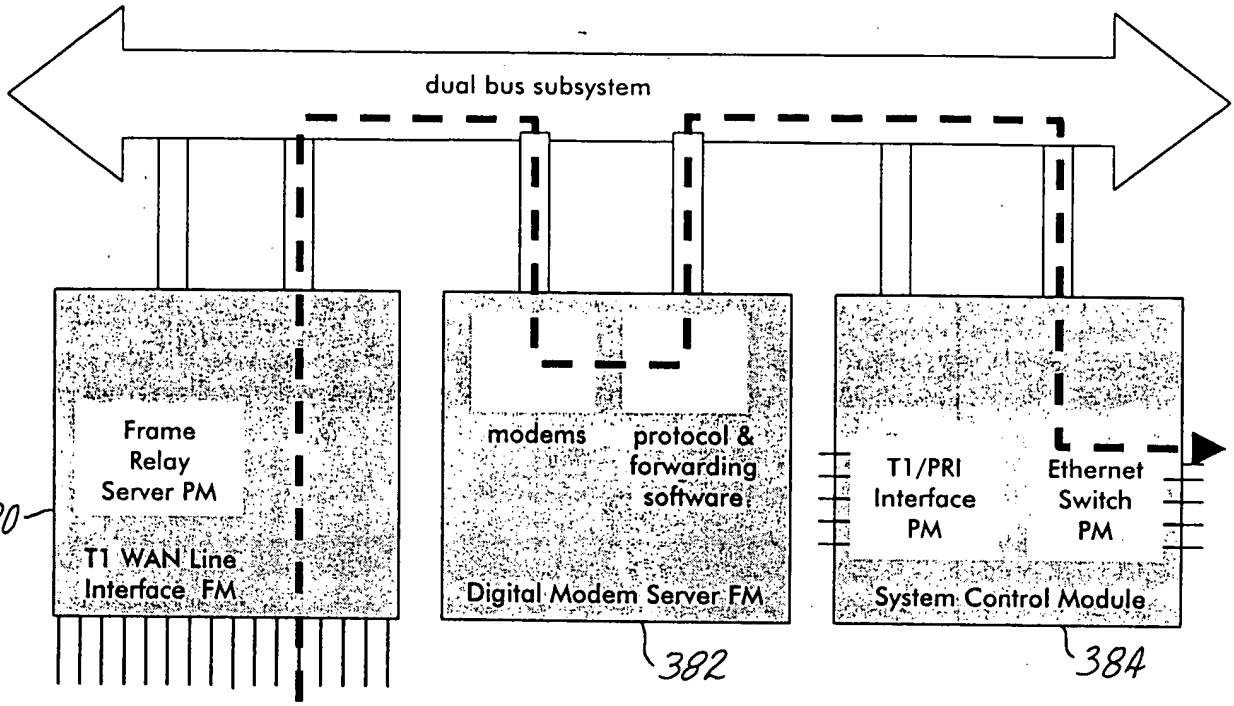

dual bus subsystem
Frame
Relay
Server PM
380
T1 WAN Line
Interface FM
modems
protocol &
forwarding
software
Digital Modem Server FM
382
T1/PRI
Interface
PM
Ethernet
Switch
PM
System Control Module
384

Fig. 14

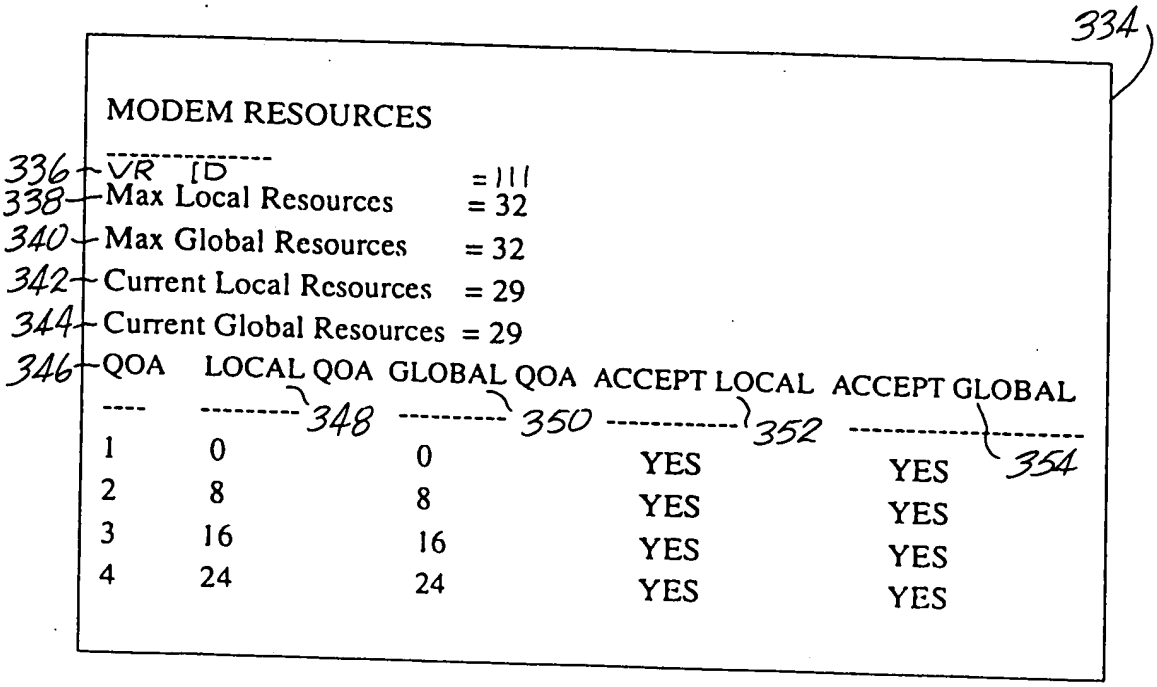
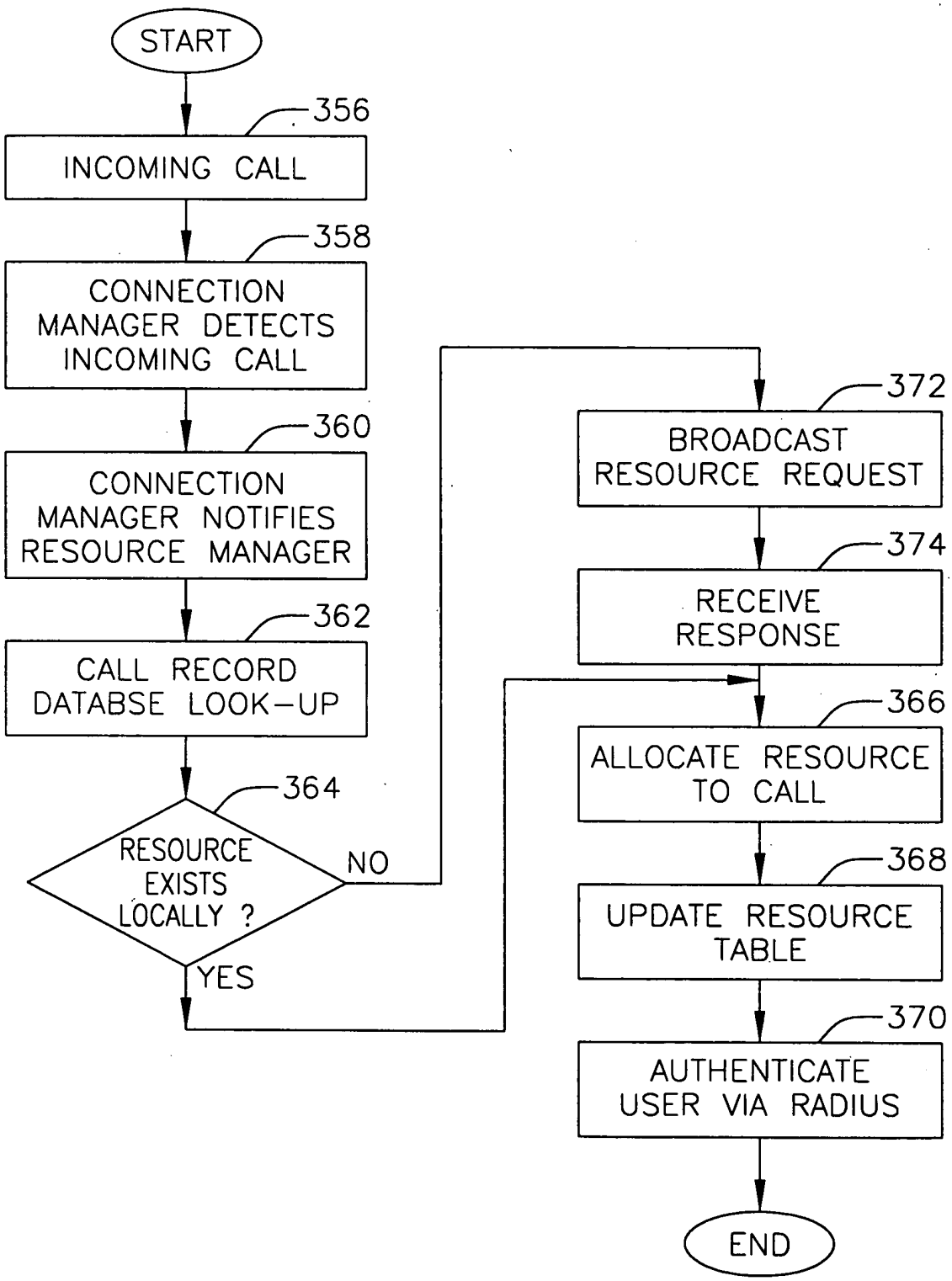

334
MODEM RESOURCES
336 VR ID = 111
338 Max Local Resources = 32
340 Max Global Resources = 32
342 Current Local Resources = 29
344 Current Global Resources = 29
346 QOA LOCAL QOA GLOBAL QOA ACCEPT LOCAL ACCEPT GLOBAL
348
350
352
354
1 0 0 YES YES
2 8 8 YES YES
3 16 16 YES YES
4 24 24 YES YES

Fig. 15

FIG. 16


START
356
INCOMING CALL
358
CONNECTION MANAGER DETECTS INCOMING CALL
360
CONNECTION MANAGER NOTIFIES RESOURCE MANAGER
362
CALL RECORD DATABSE LOOK-UP
364
RESOURCE EXISTS LOCALLY ?
NO
YES
372
BROADCAST RESOURCE REQUEST
374
RECEIVE RESPONSE
366
ALLOCATE RESOURCE TO CALL
368
UPDATE RESOURCE TABLE
370
AUTHENTICATE USER VIA RADIUS
END

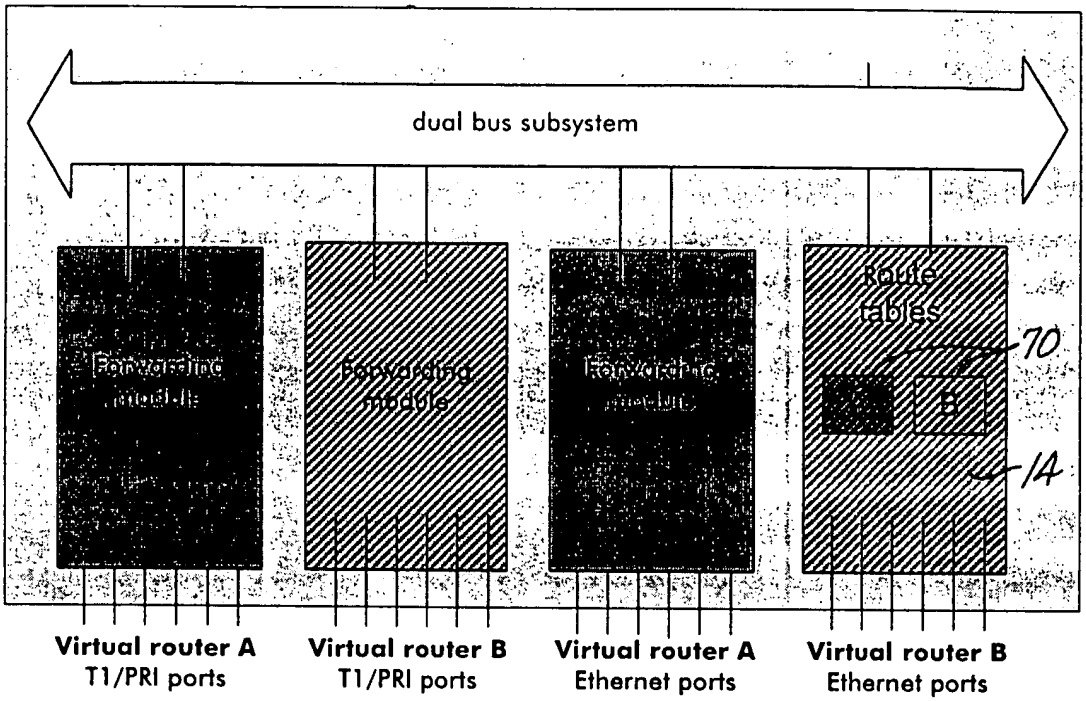

dual bus subsystem
Forwarding module
Route tables
70
B
14
Virtual router A
T1/PRI ports
Virtual router B
T1/PRI ports
Virtual router A
Ethernet ports
Virtual router B
Ethernet ports

Fig. 17

240

IP VPN Sessions:

ID	VPN-ID (244)	Source-Addr (246)	Source-Mask (248)	Dest-Addr (250)	Dest-Mask (252)
1	111	any	any	10.1.0.0	255.255.0.0
2	any	10.1.0.0	255.255.0.0	208.227.214.0	255.255.255.0
3	any	10.1.0.0	255.255.0.0	10.1.0.0	255.255.0.0
4	any	10.1.0.0	255.255.0.0	206.169.114.128	255.255.255.192
5	any	any	any	10.1.0.0	255.255.0.0
6	any	10.1.0.0	255.255.0.0	any	any
7	any	any	any	any	any

242

Fig. 18

254

```
PRI-SCM:1.2>=14:netman:ip#
IP VPN Rules:
ID  Pri  Action  IP-Proto  App-Proto  SessCnt  Pkt Count
--- ---  ------  --------  ---------  -------  ---------
1   1    Fwd     tcp       ftp        5        3939981
2   1    Drop    all       -          2        3
PRI-SCM:1.2>=14:netman:ip#
```

256 — 258 — 260 — 262 — 264 — 266 — 268

Fig. 19

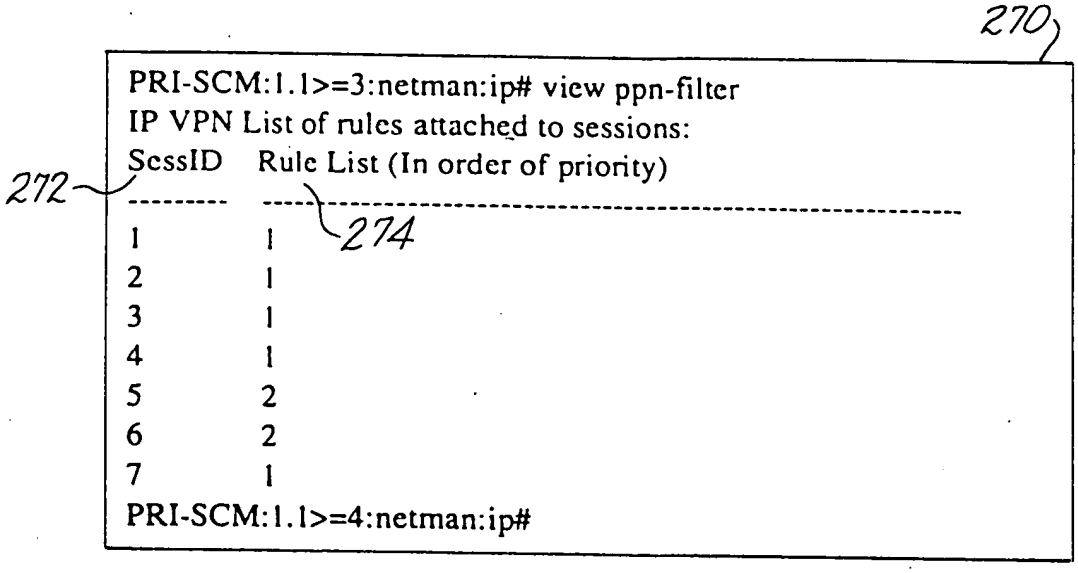
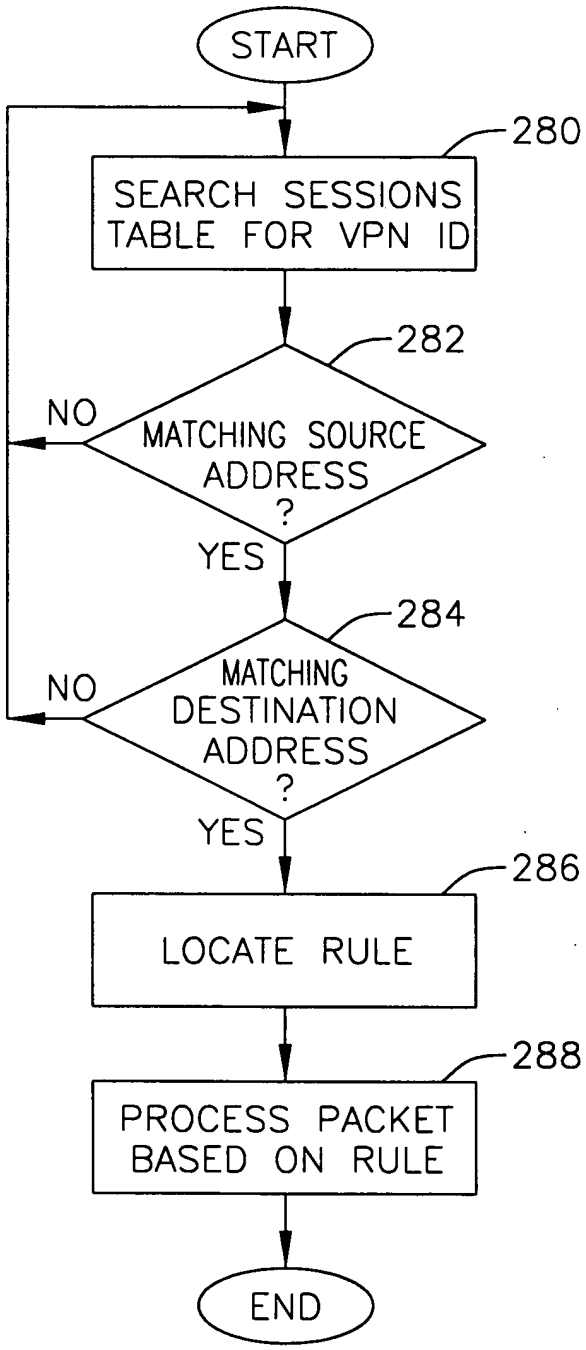

270
PRI-SCM:1.1>=3:netman:ip# view ppn-filter
IP VPN List of rules attached to sessions:
SessID Rule List (In order of priority)
272
274
1 1
2 1
3 1
4 1
5 2
6 2
7 1
PRI-SCM:1.1>=4:netman:ip#

Fig. 20

FIG.21


START
280
SEARCH SESSIONS TABLE FOR VPN ID
282
NO
MATCHING SOURCE ADDRESS ?
YES
284
NO
MATCHING DESTINATION ADDRESS ?
YES
286
LOCATE RULE
288
PROCESS PACKET BASED ON RULE
END

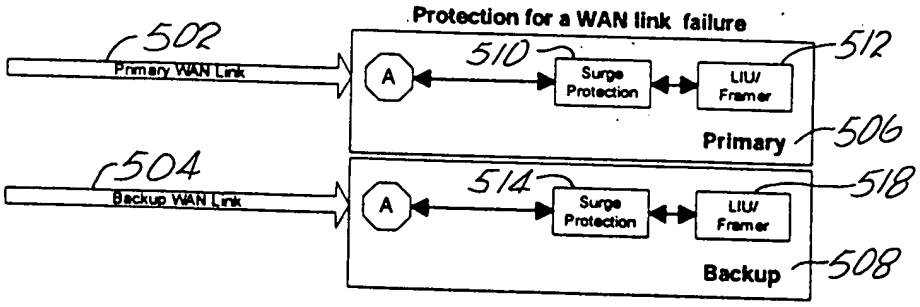

Protection for a WAN link failure
502
Primary WAN Link
504
Backup WAN Link
A
510
Surge Protection
LIU/ Framer
512
Primary
506
514
Surge Protection
LIU/ Framer
518
Backup
508

Fig. 22

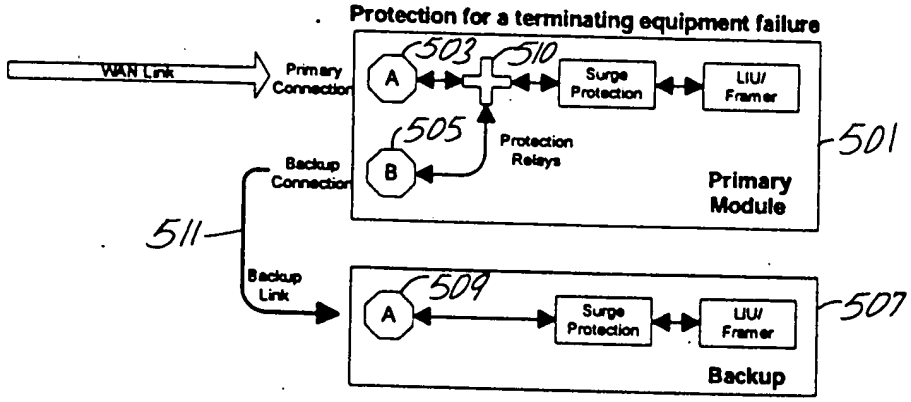

Protection for a terminating equipment failure
WAN Link
Primary Connection
503
510
A
Surge Protection
LIU/ Framer
505
Protection Relays
B
Backup Connection
501
Primary Module
511
Backup Link
509
A
Surge Protection
LIU/ Framer
507
Backup

Fig. 23

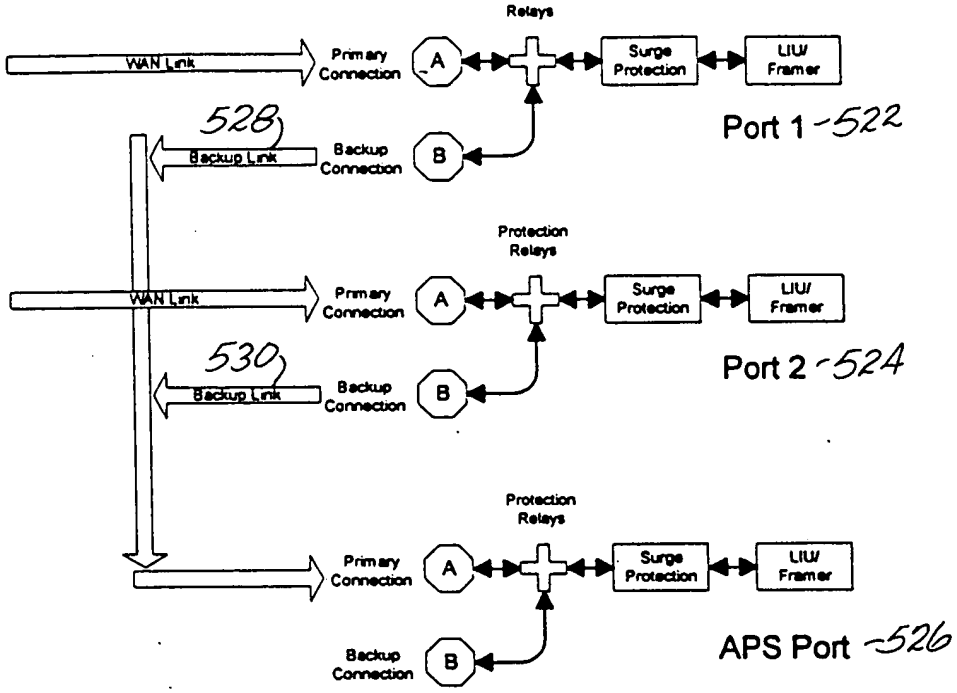

Relays
WAN Link
Primary Connection
A
Surge Protection
LIU/ Framer
528
Backup Link
Backup Connection
B
Port 1 -522
Protection Relays
WAN Link
Primary Connection
A
Surge Protection
LIU/ Framer
530
Backup Link
Backup Connection
B
Port 2 -524
Protection Relays
Primary Connection
A
Surge Protection
LIU/ Framer
Backup Connection
B
APS Port -526

Fig. 24

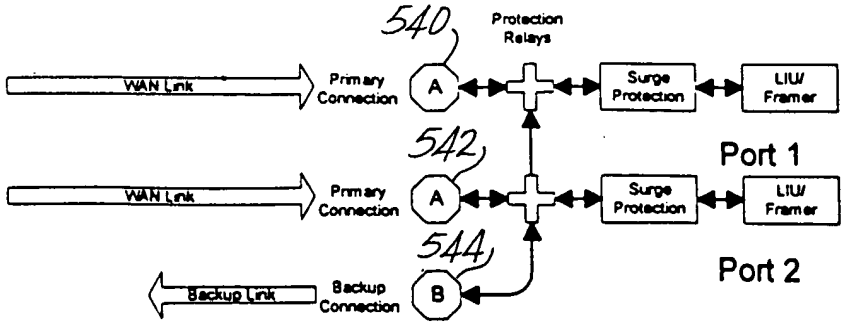

540
Protection Relays
WAN Link
Primary Connection
A
Surge Protection
LIU/ Framer
542
Port 1
WAN Link
Primary Connection
A
Surge Protection
LIU/ Framer
544
Port 2
Backup Link
Backup Connection
B

Fig. 25

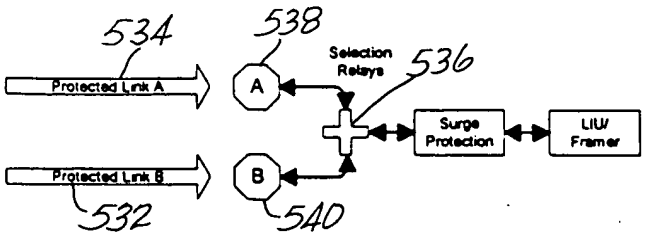

534
538
Selection Relays
536
Protected Link A
A
Surge Protection
LIU/ Framer
Protected Link B
B
532
540

Fig. 26

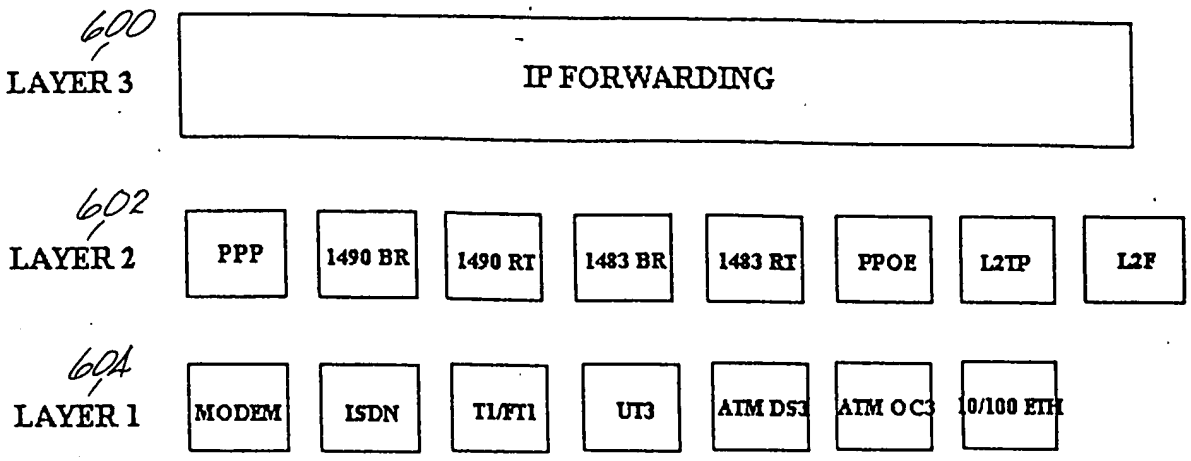
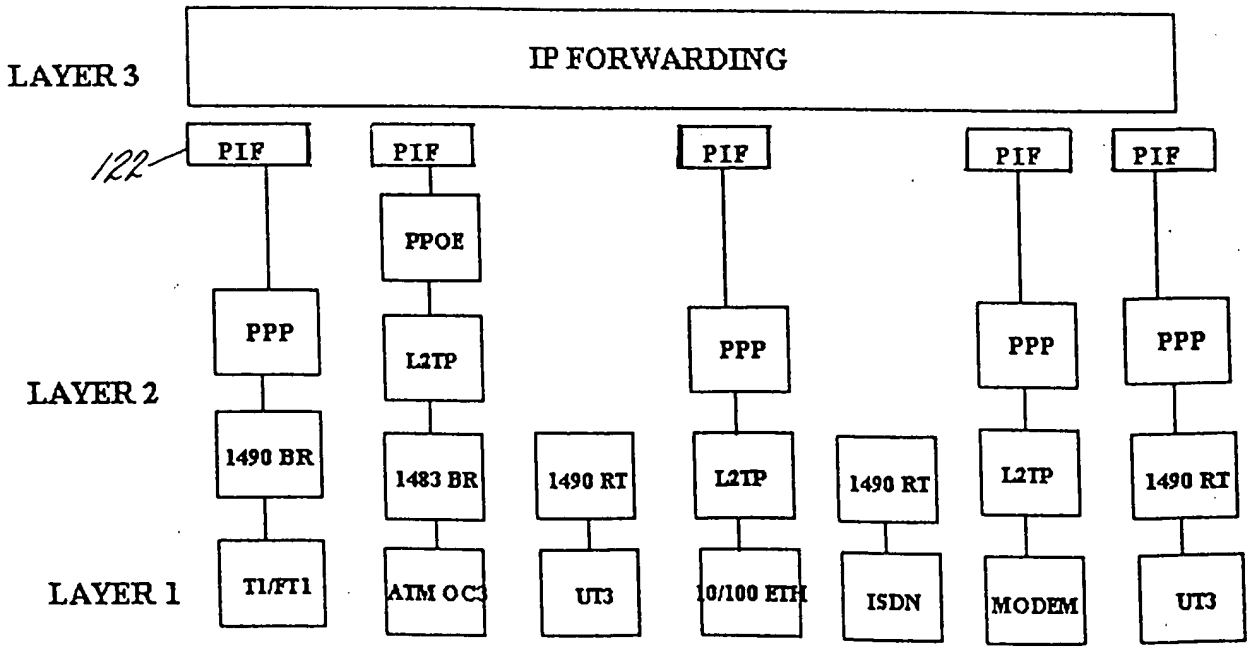

600
LAYER 3
IP FORWARDING
602
LAYER 2
PPP
1490 BR
1490 RT
1483 BR
1483 RT
PPOE
L2TP
L2F
604
LAYER 1
MODEM
ISDN
T1/FT1
UT3
ATM DS3
ATM OC3
10/100 ETH

Fig. 27

Fig. 28


LAYER 3
IP FORWARDING
122
PIF
PIF
PIF
PIF
PIF
PPOE
PPP
L2TP
PPP
PPP
PPP
LAYER 2
1490 BR
1483 BR
1490 RT
L2TP
1490 RT
L2TP
1490 RT
LAYER 1
T1/FT1
ATM OC3
UT3
10/100 ETH
ISDN
MODEM
UT3

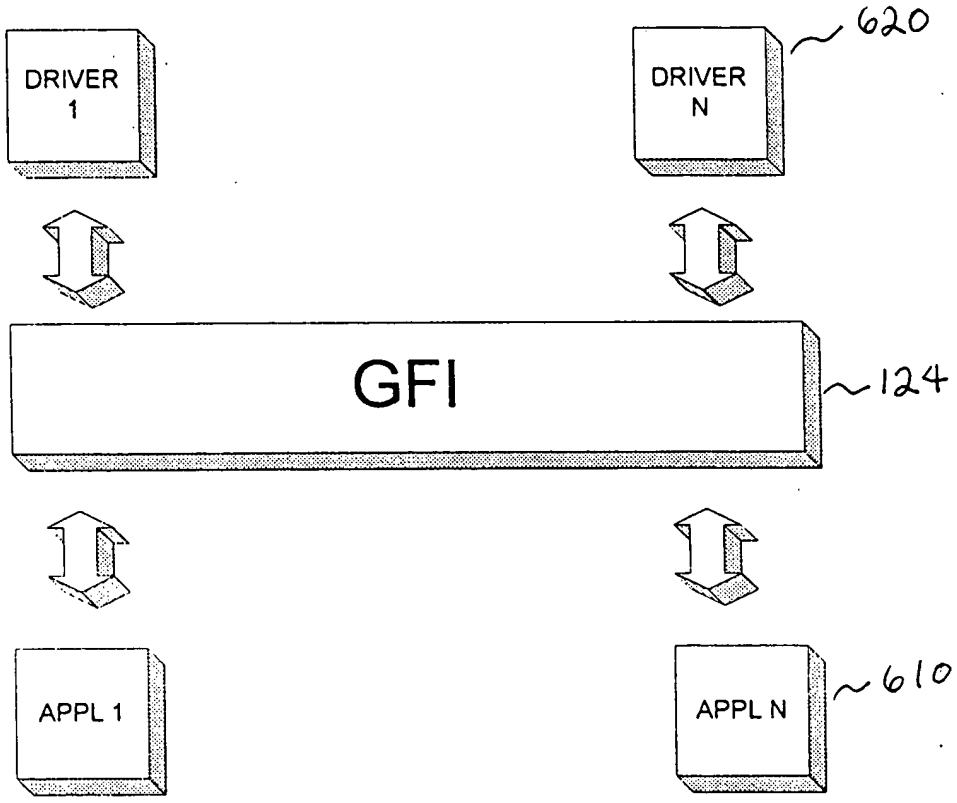


Fig 29

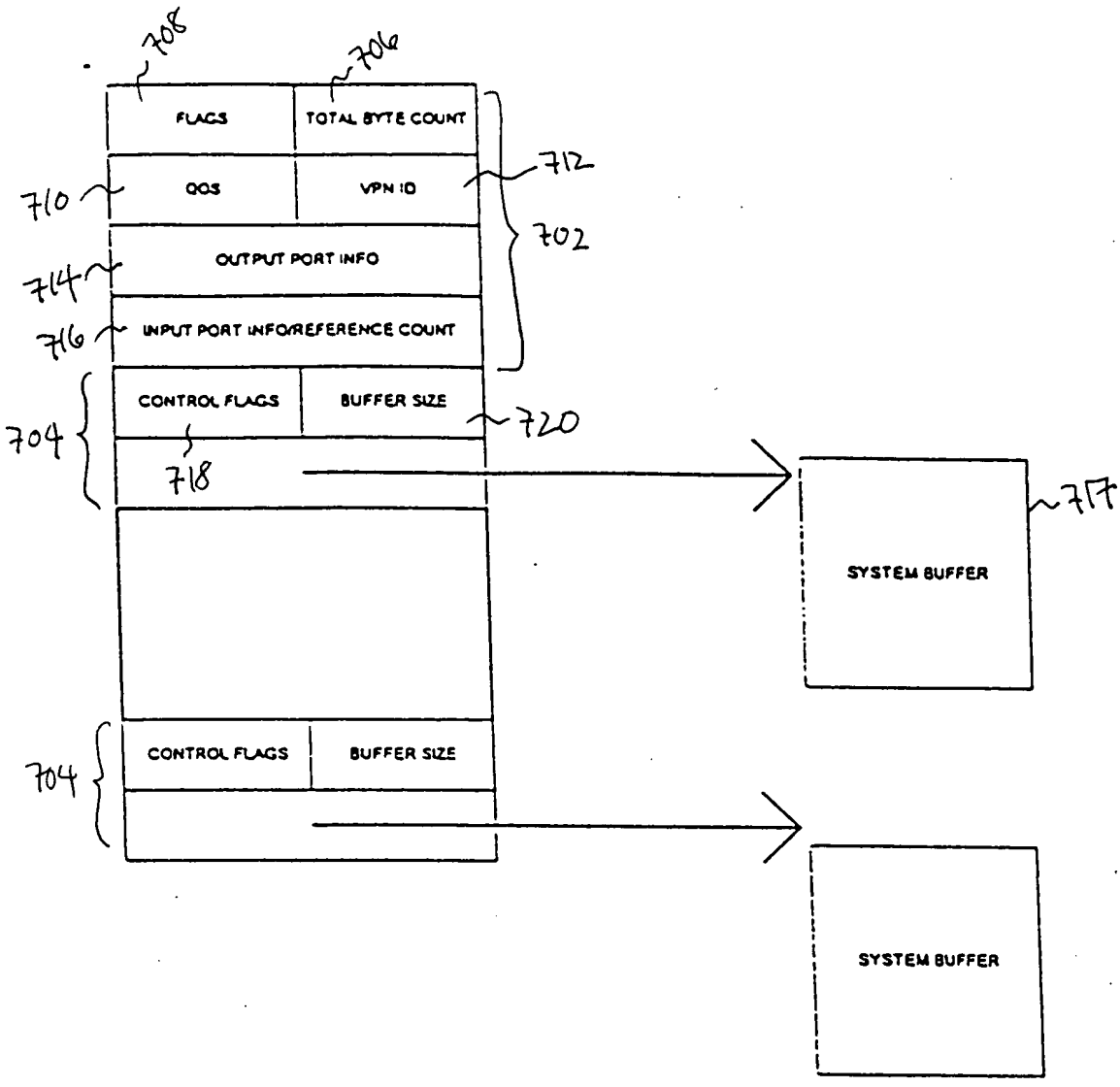

700
708
706
FLAGS
TOTAL BYTE COUNT
712
710
QOS
VPN ID
702
714
OUTPUT PORT INFO
716
INPUT PORT INFO/REFERENCE COUNT
704
CONTROL FLAGS
BUFFER SIZE
720
718
SYSTEM BUFFER
717
704
CONTROL FLAGS
BUFFER SIZE
SYSTEM BUFFER

Fig 30

FPA

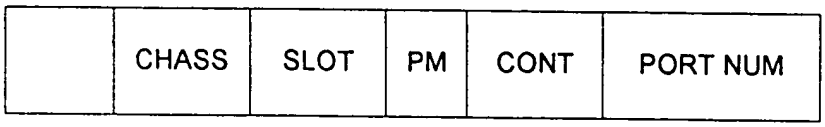


Fig 31

PPA

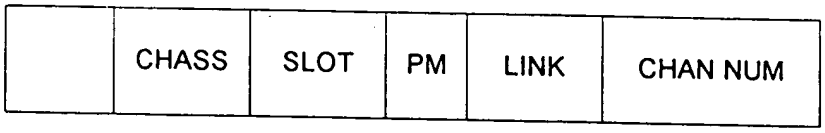
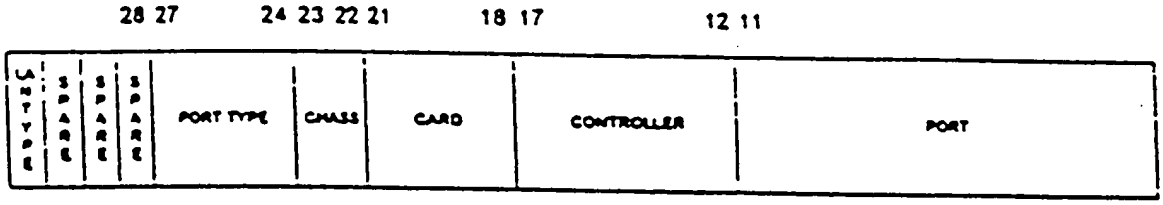


Fig 32

INPUT PORT FORMAT



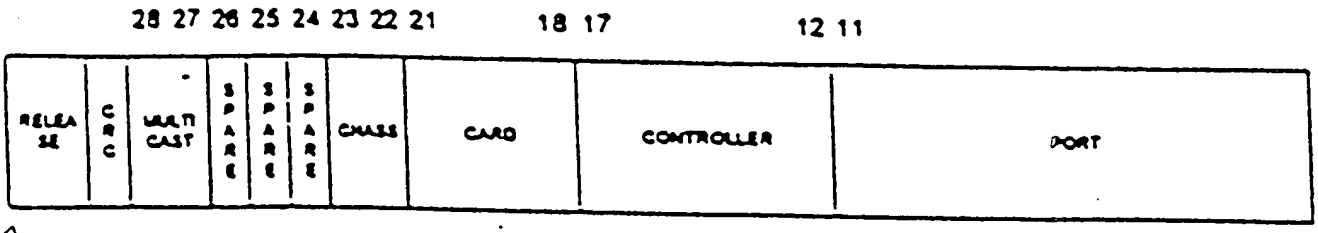
716

Fig 33

Port Addr Range	Type	Chass	Card	Control
0-19	Well Known Internal Multicast Address	NA	NA	0
20-39	Well Known Internal Unicast Address	NA	Card Num	0
40-79	Well Known External Multicast Address	NA	NA	0
80-511	Dynamic External Multicast Address	NA	NA	0
512-2048	Remote Port Address	Chass Num	Card Num	0

Fig. 35

OUTPUT PORT FORMAT



714

Fig 34

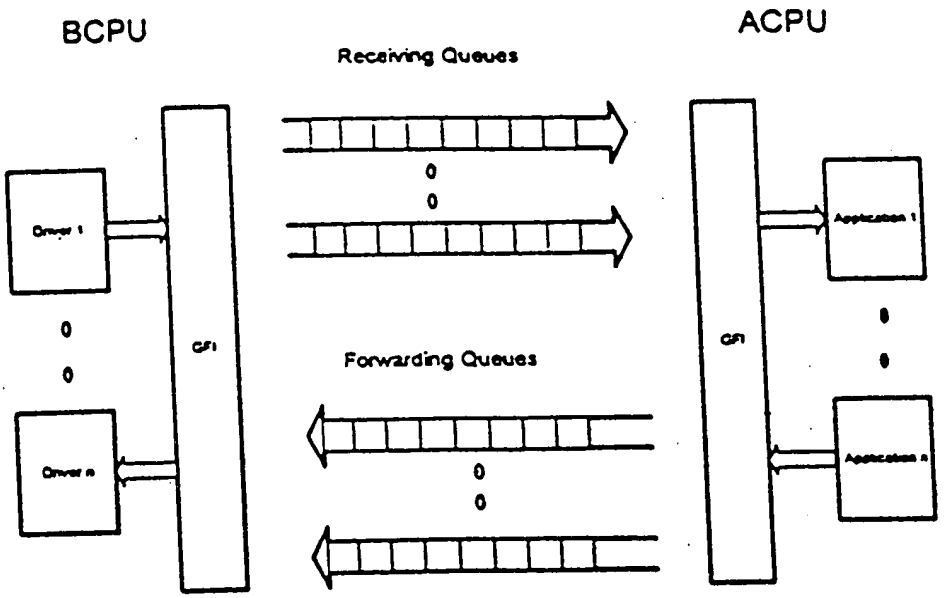

BCPU
ACPU
Receiving Queues
Forwarding Queues
Driver 1
Driver n
CFI
CFI
Application 1
Application n

Fig 36

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